

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

The present claims have not been amended herein.

1. (PREVIOUSLY PRESENTED) An optical pickup unit feeding apparatus for moving an optical pickup unit by rotation of a lead screw with a spiral groove in an optical disc drive, comprising:

a guide member combined with the optical pickup unit, the guide member comprising:
one or more contact parts engaging the spiral groove formed on the lead screw, and
applying a force to the optical pickup unit in response to the rotation of the lead screw, wherein the force moves the optical pickup unit; and

an elastic member comprising a first elastic section elastically engaging the contact parts to the spiral groove, and a second elastic section forcing the contact parts not to separate from the spiral groove,

wherein a spring constant of the second elastic section is greater than a spring constant of the first elastic section, and

wherein the elastic member is a viscoelastic material having a damping characteristic.

2. (PREVIOUSLY PRESENTED) An optical pickup unit feeding apparatus for moving an optical pickup unit by rotation of a lead screw with a spiral groove in an optical disc drive, comprising:

a guide member combined with the optical pickup unit, the guide member comprising:
one or more contact parts engaging the spiral groove formed on the lead screw, and
applying a force to the optical pickup unit in response to the rotation of the lead screw, wherein the force moves the optical pickup unit; and

an elastic member comprising a first elastic section elastically engaging the contact parts to the spiral groove, and a second elastic section forcing the contact parts not to separate from the spiral groove,

wherein a spring constant of the second elastic section is greater than a spring constant of the first elastic section, and

wherein the elastic member comprises:

a body forming the second elastic section; and
at least one protrusion from the body forming the first elastic section.

3. (ORIGINAL) The optical pickup unit feeding apparatus of claim 2, wherein the elastic member is a viscoelastic material having a damping characteristic.

4. (PREVIOUSLY PRESENTED) An optical pickup unit feeding apparatus for moving an optical pickup unit by rotation of a lead screw with a spiral groove in an optical disc drive, comprising:

a guide member combined with the optical pickup unit, the guide member comprising:
one or more contact parts engaging the spiral groove formed on the lead screw, and
applying a force to the optical pickup unit in response to the rotation of the lead screw, wherein the force moves the optical pickup unit; and

an elastic member comprising a first elastic section elastically engaging the contact parts to the spiral groove, and a second elastic section forcing the contact parts not to separate from the spiral groove,

wherein a spring constant of the second elastic section is greater than a spring constant of the first elastic section, and

wherein the elastic member further comprises a third elastic section to reduce an elastic force of the elastic member when a displacement of the elastic member in the second elastic section would be sufficient, without the third elastic section, to separate the contact parts from the spiral groove.

5. (PREVIOUSLY PRESENTED) The optical pickup unit feeding apparatus of claim 4, wherein the elastic member comprises:

a body forming the second elastic section;
at least one protrusion from the body forming the first elastic section; and
at least one cavity in the body comprising the third elastic section.

6. (ORIGINAL) The optical pickup unit feeding apparatus of claim 5, wherein the elastic member is a viscoelastic material having a damping characteristic.

7. (PREVIOUSLY PRESENTED) An optical pickup unit feeding apparatus for moving an optical pickup unit by rotation of a lead screw with a spiral groove in an optical disc drive, comprising:

a guide member combined with the optical pickup unit, the guide member comprising:
one or more contact parts engaging the spiral groove formed on the lead screw, and
applying a force to the optical pickup unit in response to the rotation of the lead screw, wherein
the force moves the optical pickup unit; and

an elastic member comprising a first elastic section elastically engaging the contact parts
to the spiral groove, and a second elastic section forcing the contact parts not to separate from
the spiral groove,

wherein a spring constant of the second elastic section is greater than a spring constant
of the first elastic section, and

wherein the elastic member is a coil spring, wherein the first and second elastic sections
have different diameters, and a spring constant of the coil spring is inversely proportional to the
diameter thereof.

8. (ORIGINAL) The optical pickup unit feeding apparatus of claim 7, wherein a diameter
of the first elastic section is greater than a diameter of the second elastic section.

9. (ORIGINAL) An optical pickup unit feeding apparatus for moving an optical pickup unit
by rotation of a lead screw with a spiral groove, comprising:

a guide member combined with the optical pickup unit, the guide member comprising:
one or more contact parts engaging the spiral groove formed on the lead screw, applying
a force to the optical pickup unit in response to the rotation of the lead screw, wherein the force
moves the optical pickup unit; and

an elastic member pushing the contact parts toward the spiral groove,
wherein the elastic member is a viscoelastic material having a good damping
characteristic.

10. (PREVIOUSLY PRESENTED) An optical disc drive comprising:
an optical pickup unit accessing a rotating optical disc; and
an optical pickup unit feeding apparatus moving the optical pickup unit in a radial
direction of the optical disc by rotation of a lead screw with a spiral groove,

wherein the optical pickup unit feeding apparatus comprises:
a guide member combined with an optical pickup unit, the guide member
comprising:

one or more contact parts engaging the spiral groove formed on the lead screw,
applying a force to the optical pickup unit in response to the rotation of the lead screw,

wherein the force moves the optical pickup unit; and
an elastic member comprising a first elastic section elastically engaging the contact parts the spiral groove, and a second elastic section forcing the contact parts not to separate from the spiral groove,
wherein a spring constant of the second elastic section is greater than a spring constant of the first elastic section, and
wherein the elastic member is a viscoelastic material having a good damping characteristic.

11. (PREVIOUSLY PRESENTED) An optical disc drive comprising:
an optical pickup unit accessing a rotating optical disc; and
an optical pickup unit feeding apparatus moving the optical pickup unit in a radial direction of the optical disc by rotation of a lead screw with a spiral groove,
wherein the optical pickup unit feeding apparatus comprises:
a guide member combined with an optical pickup unit, the guide member comprising:
one or more contact parts engaging the spiral groove formed on the lead screw, applying a force to the optical pickup unit in response to the rotation of the lead screw,
wherein the force moves the optical pickup unit; and
an elastic member comprising a first elastic section elastically engaging the contact parts the spiral groove, and a second elastic section forcing the contact parts not to separate from the spiral groove,
wherein a spring constant of the second elastic section is greater than a spring constant of the first elastic section, and
wherein the elastic member comprises:
a body forming the second elastic section; and
at least one protrusion from the body forming the first elastic section.

12. (ORIGINAL) The optical disc drive of claim 11, wherein the elastic member is a viscoelastic material having a good damping characteristic.

13. (PREVIOUSLY PRESENTED) An optical disc drive comprising:
an optical pickup unit accessing a rotating optical disc; and
an optical pickup unit feeding apparatus moving the optical pickup unit in a radial direction of the optical disc by rotation of a lead screw with a spiral groove,

wherein the optical pickup unit feeding apparatus comprises:
a guide member combined with an optical pickup unit, the guide member comprising:
one or more contact parts engaging the spiral groove formed on the lead screw, applying a force to the optical pickup unit in response to the rotation of the lead screw, wherein the force moves the optical pickup unit; and
an elastic member comprising a first elastic section elastically engaging the contact parts the spiral groove, and a second elastic section forcing the contact parts not to separate from the spiral groove,
wherein a spring constant of the second elastic section is greater than a spring constant of the first elastic section, and
wherein the elastic member further comprises a third elastic section to reduce an elastic force of the elastic member when a displacement of the elastic member in the second elastic section would be sufficient, without the third elastic section, to separate the contact parts from the spiral groove.

14. (PREVIOUSLY PRESENTED) The optical disc drive of claim 13, wherein the elastic member comprises:

a body forming the second elastic section;
at least one protrusion from the body forming the first elastic section; and
at least one cavity in the body comprising the third elastic section.

15. (ORIGINAL) The optical disc drive of claim 14, wherein the elastic member is a viscoelastic material having a good damping characteristic.

16. (ORIGINAL) An optical disc drive comprising:
an optical pickup unit accessing a rotating optical disc; and
an optical pickup unit feeding apparatus moving the optical pickup unit in a radial direction of the optical disc by rotation of a lead screw with a spiral groove,
wherein the optical pickup unit feeding apparatus comprises:
a guide member combined with the optical pickup unit, the guide member comprising:

one or more contact parts engaging the spiral groove formed on the lead screw, applying a force to the optical pickup unit in response to the rotation of the lead screw, wherein the force moves the optical pickup unit; and

an elastic member pushing the contact parts toward the spiral groove,
wherein the elastic member is made of a viscoelastic material having a good
damping characteristic.

17. (PREVIOUSLY PRESENTED) A method of moving an optical pickup unit by rotation
of a cylindrical member with a groove in an optical disc drive, the method comprising:

providing viscoelastic force on one or more contact parts engaged with the groove
formed on the cylindrical member; and

rotating the cylindrical member in opposite directions;

wherein the viscoelastic force is provided by an viscoelastic member comprising a first
elastic section and a second elastic section, and a spring constant of the second elastic section
is greater than a spring constant of the first elastic section.

18. (ORIGINAL) The method of claim 17, wherein the first elastic section elastically
engages the contact parts to the groove, and the second elastic section forces the contact parts
not to separate from the groove.